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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---------------------------------------|-------------|----------------------|-------------------------|------------------|
| 10/804,406 | 03/18/2004 | Tae Won Lee | 2080-3241 | 7370 |
| 35884 | 7590 | 10/02/2006 | EXAMINER | |
| LEE, HONG, DEGERMAN, KANG & SCHMADEKA | | | NATNAEL, PAULOS M | |
| 801 S. FIGUEROA STREET | | | ART UNIT | PAPER NUMBER |
| 12TH FLOOR | | | | 2622 |
| LOS ANGELES, CA 90017 | | | DATE MAILED: 10/02/2006 | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|-------------------------------|------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/804,406 | LEE, TAE WON | |
| | Examiner Paulos M. Natnael | Art Unit 2622 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) 17-30 is/are allowed.
- 6) Claim(s) 1,31 and 34 is/are rejected.
- 7) Claim(s) 2-16,32 and 33 is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 1/31/05.
- 4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) Notice of Informal Patent Application
- 6) Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Henderson et al., U.S. Patent No. **7,006,040**.

Considering claim 1, Henderson et al. (hereinafter, "Henderson") discloses steerable antenna and receiver interface for terrestrial broadcast. As illustrated in Fig.3, Henderson discloses a television receiver 104 comprising the antenna 302, display device 320, and a receiver 310 which in turn comprises tuner 314, demodulator 316 and controller 312. The antenna comprises an antenna loop 304 and antenna control and parallel-tuned coil and varactor diode, 306. The demodulator **316** is responsible for performing the demodulation operation on the received signal and for generating various signal measurements which are used by the controller **312** in generating the antenna control signals. **Col. 6, lines 27-31.** The diode circuit **306** provides tuning if

necessary or helpful to maximize the delivered signal level and/or S/N ratio. Col. 6, lines 65+. Thus, Henderson discloses all claimed subject matter.

3. Claims 31, 34 are rejected under 35 U.S.C. 102(e) as being anticipated by Meehan et al., U.S. Patent No. 6,950,477.

Considering claims 31 and 34, Meehan et al. (hereinafter, "Meehan") discloses a blind dual error antenna diversity (DEAD) algorithm for beamforming antenna systems.

Meehan teaches that "the gain due to beamforming can be split into two components, antenna gain and diversity gain. Antenna gain is defined as the increase in signal power after summing the antenna element outputs (assuming uncorrelated noise).

[emphasis added] Diversity gain is defined as the gain due to the fact that the different antennae are spaced apart and the input signals may be uncorrelated, i.e., the antennae may see different channels. See col. 5, lines 29-36. Furthermore, Meehan discloses the performance of the adaptive DBBF antenna system 100 employing the DEAD algorithm is illustrated in the tables below. Table I illustrates antenna system performance for two equal channels; Table II illustrates antenna system performance given one good channel and one very poor channel. It will be appreciated that columns depicting signal-to-noise (SNR) ratio and symbol error rate (SER) are used in illustrating the performance of the antenna system illustrated in FIG. 2 over the antenna system illustrated in FIG. 1. Meehan utilizes the SNR, SER and signal power to maximize

antenna system performance for a desired number of channels. Meehan therefore discloses all claimed subject matter.

Allowable Subject Matter

4. Claims 17-30 are allowed.
5. Claims 2-16,32, 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
6. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to disclose the following combination of limitations comprising: a digital TV receiving smart antenna control system, comprising: the smart antenna system forming an optimal antenna pattern for a signal reception by controlling the antenna through an antenna control signal; a tuner for tuning only a specific RF signal in RF (Radio Frequency) signal received through a smart antenna system, and converting the signal into an IF signal after automatically controlling RF gain tuned according to RF gain control signal; a VSB (Vestigial Side Band) demodulator for demodulating after controlling the IF (Intermediate Frequency) signal gain according to IF gain control signal; a channel information detector for detecting channel information such as signal power, multi-channel signal power, SNR (signal-to-noise ratio), and SER (Segment Error Rate) outputted from the VSB demodulator, determining the channel condition and outputting the channel information and the channel conditions; and an antenna direction acquisition controller

for receiving signal power condition, multi- channel signal power condition, SNR condition, SER condition, and signal power information form the channel information detector and detecting and outputting an antenna direction of the maximum signal power, fixing the RF gain control signal and IF gain control signal in acquisition process, and changing the signals according to the receiving signal in a tracking process, as in claim 17.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Liu et al., U.S. Pat. No. 7,034,893 discloses method and apparatus for reception of terrestrial digital television signal.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paulos M. Natnael whose telephone number is (571) 272-7354. The examiner can normally be reached on 8AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571)272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Paulos M. Natnael
Primary Examiner
Art Unit 2622

September 26, 2006